

Mid - Air Collision Avoidance Program

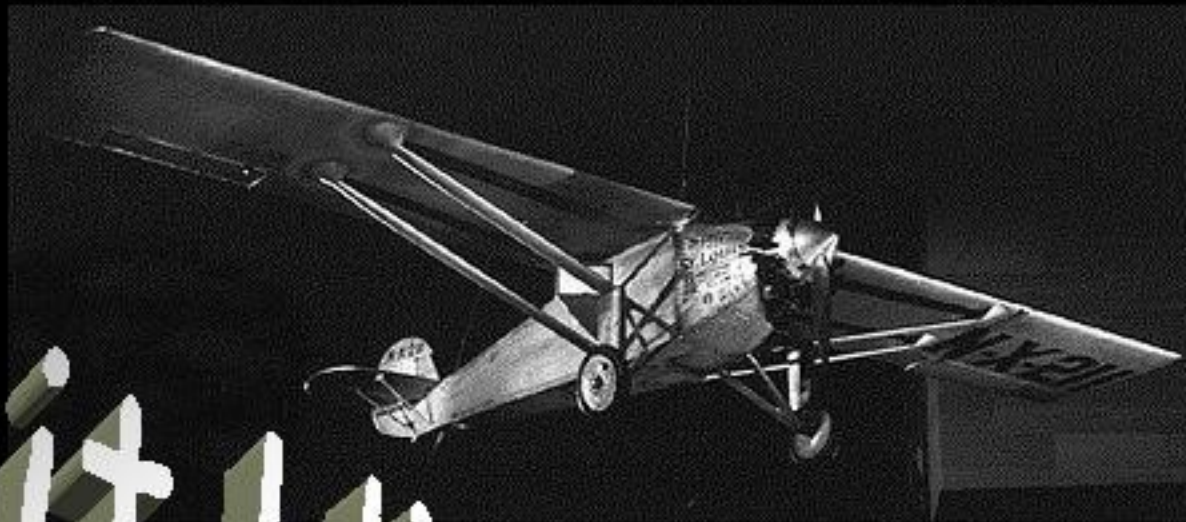
131st Fighter Wing
St. Louis, Missouri



What is this all about?

- Midair collisions are an area of vital concern to everyone who flies an airplane. The actual number of midair collisions between Air Force aircraft and general aviation is relatively low; however, 80% of reported Air Force near misses occur with general aviation aircraft. Because of increasing general aviation traffic and our unique type of flying here, we want to inform you about the Missouri Air National Guard and our flying activity.

Unit History



Unit History

1920s

1930s

1940s

1950s

1960s

1970s

1980s

1990s

**Organized in 1923 as
110th Observation Squadron**



**Unit officers purchased the first
aircraft - a JN-4 "Jenny"**



**Captain Charles Lindbergh, member of 110th
during historic 1927 Trans-Atlantic flight**



Unit History

1920s

1930s

1940s

1950s

1960s

1970s

1980s

1990s



Consolidated in new hanger at Lambert Field

110th members hone skills on the K-17 Aerial Camera



Flew new aircraft, O-38 and the O-47 the first mid-wing, all-metal aircraft

Unit History

1920s

1930s

1940s

1950s

1960s

1970s

1980s

1990s

**Federal Mobilization for World War II.
Redesignated as 110th Tactical
Reconnaissance Squadron**



**Unit saw duty in Australia, New Guinea,
Philippines and Japan. Flew new aircraft
P-39, P-40 and famed P-51 "Mustang"**

**Presidential Unit Citation awarded
destroyed 123 aircraft and 11 ships**



Unit History

1920s

1930s

1940s

1950s

1960s

1970s

1980s

1990s

Federal mobilization for Korean Conflict

After Korea, unit received new aircraft - the B26 "Invader" and new mission as 131st Light Bombardment Wing



Entered "Jet Age" with the T-33, F-80 and F-84 Thunderstreak

Unit History

1920s

1930s

1940s

1950s

1960s

1970s

1980s

1990s

**Federal mobilization for Berlin Crisis.
Assigned to Toul-Rosieres Air Base France**



**Wing mascot
Airman Banjo A. Burro**



**The unit acquired the
F-100 "Supersabre"**



Unit History

1920s

1930s

1940s

1950s

1960s

1970s

1980s

1990s



110th members salute the 50th anniversary of Lindbergh's flight

110th Tactical Fighter Squadron designated as "Lindbergh's Own"



The unit acquired the "home grown" McDonnell Douglas F-4 "Phantom"

Unit History

1920s

1930s

1940s

1950s

1960s

1970s

1980s

1990s

Redesignated as 131st Fighter Wing; 110th Fighter Squadron, the unit's present designation



Acquired the McDonnell Douglas F-15 Eagle



...new mission in air superiority



Mobilized for Operation Desert Shield/Storm and the Great Flood of '93



Community Involvement

Fair St Louis
County Air Show
Veterans' Parade
Spirit of Giving
Camp Wonderland
D.A.R.E. Programs
Veterans' Stand Down
Boy Scout Jamboree

Missouri Chapter of
Korean Veterans
National Sojourners
Old Newsboy Day



131FW in Action

- Operation NOBLE EAGLE
- Operation IRAQI FREEDOM
- Operation ENDURING FREEDOM
- Operation SOUTHERN WATCH
- Operation NORTHERN WATCH
- Operation PROVIDE COMFORT
- Operation DESERT SHIELD
- Operation DESERT STORM
- Berlin Crisis
- Korean Conflict
- WWII

Vision: Air Superiority-Anywhere, Anytime



131st Fighter Wing Mission:

To serve the state and nation with a team of professionals providing Air Superiority and Community Security and Support with the world's best trained and equipped people.

F-15 Power Plant: Two Pratt & Whitney F100-PW-100 Turbofan Engines with Afterburners

Thrust: 23,450 pounds each engine
Speed: 1,875 mph (Mach 2.5 plus)
Ceiling: 65,000 feet



Single Mission: Air Superiority

All Weather

Unprecedented Maneuverability

State of the Art Weapons and Avionics

Air to Air Weapons

- AIM-120 Advanced Medium Range A/A Missile**
- AIM-9M Sidewinder Missile**
- 20mm Internal Gatling Gun**



Combat Load



Why We Fly



- Support Home Land Defense
- Support Contingency Operations Around the World
 - Train for Combat So Others Don't Have Too.

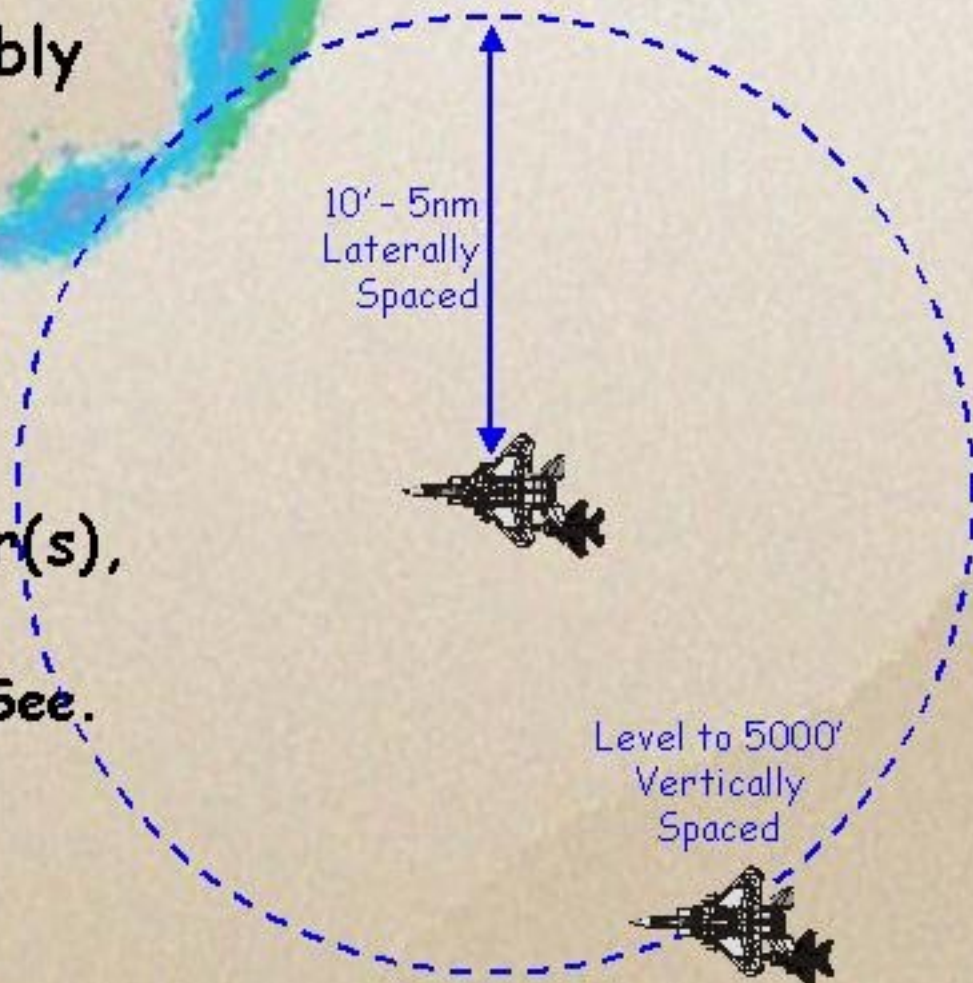
MACA Program?

A photograph of the front of a white propeller-driven aircraft, likely a Cessna, on a runway. The aircraft has two propellers and is facing the viewer. The background is a clear blue sky.

- The purpose of this web site is to alert you to the many areas of high mid-air collision potential in the skies above Missouri and to discuss ways we can all make the skies safer. This next few slides will describe the types of military aircraft you may encounter in the local area, arrival and departure routes, and military operating areas. It will also provide information regarding the difficulties associated with seeing and avoiding other aircraft, and methods to improve your scan.

Formations

- If You See One F-15 (or Fighter) There Are Probably 1-3 More Jets Around.
- Fighters, in the Same Formation, Fly
 - 10' to 5nm Laterally
 - Level to 5000' Vertically
- To Find the Other Fighter(s), Look:
 - 360° Around the One You See.
 - Level, Up, and Down



Practice Instrument Approaches and Pattern Work

Lambert International Airport

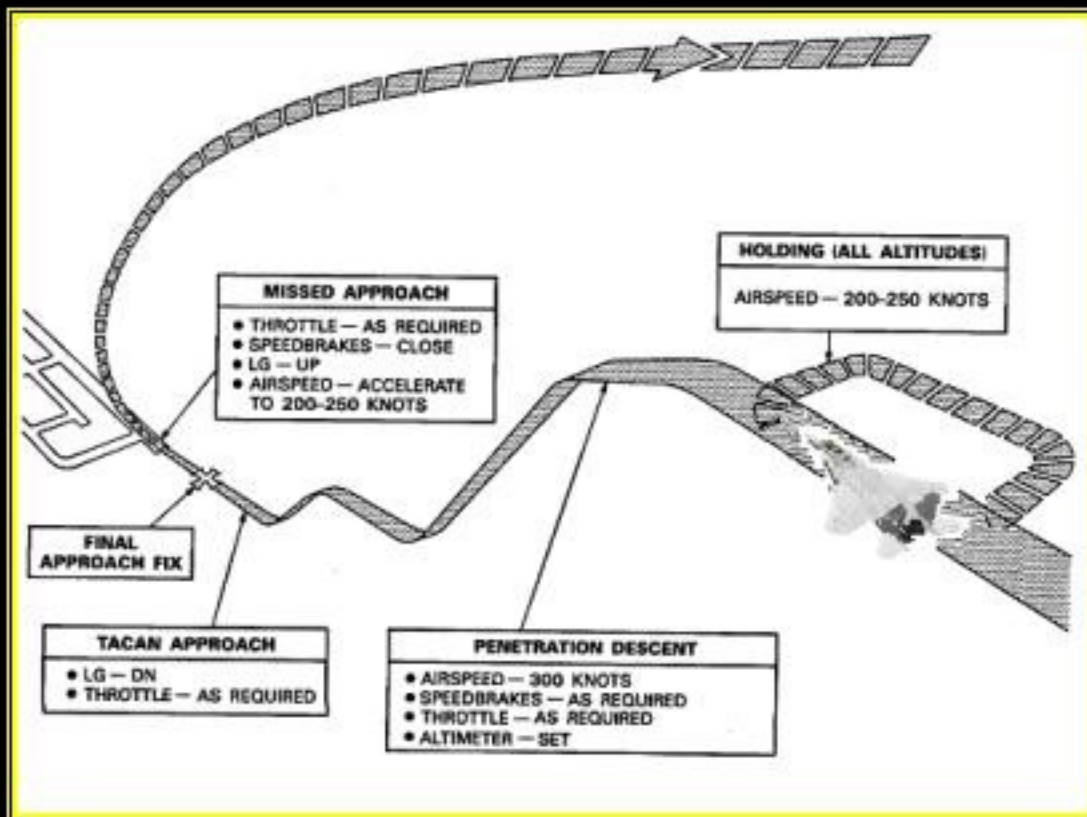
Scott Air Force Base

Whiteman Air Force Base

Forney Army Airfield

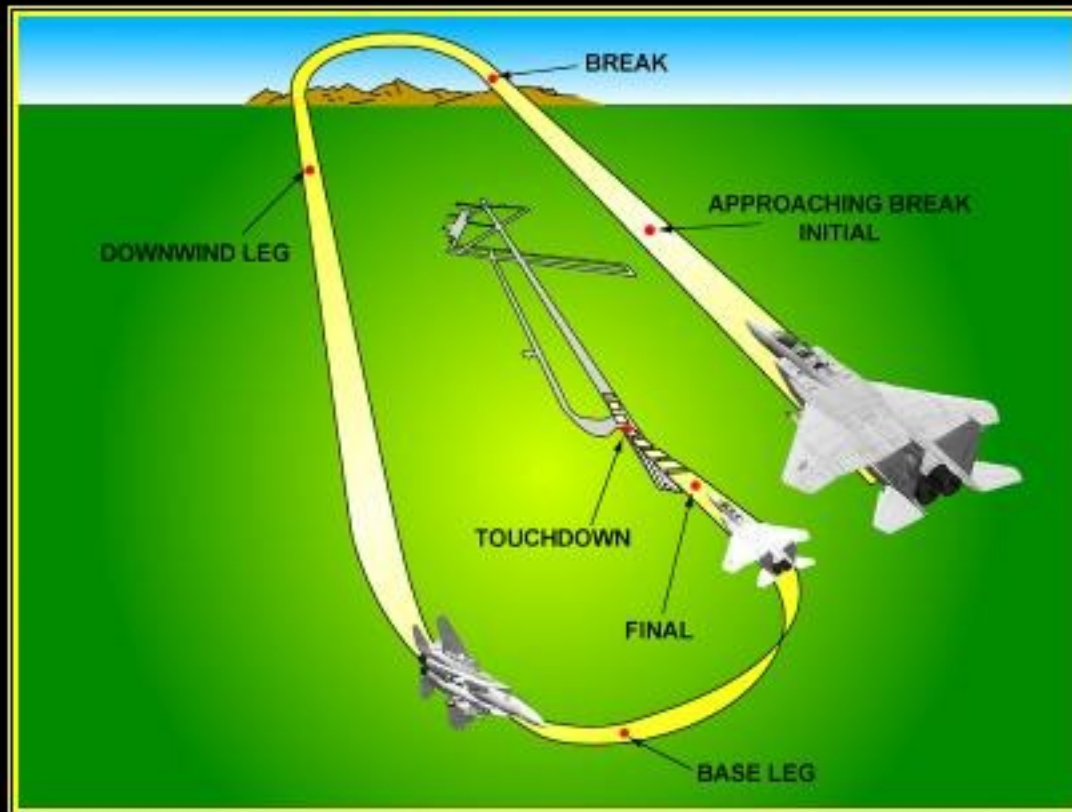
Spirit of St. Louis Airport

Instrument Approach



- **Holding**
 - 200-250 KIAS
- **Penetration**
 - 300 KIAS
- **Final Approach**
 - 145 KIAS Min

Overhead Approach

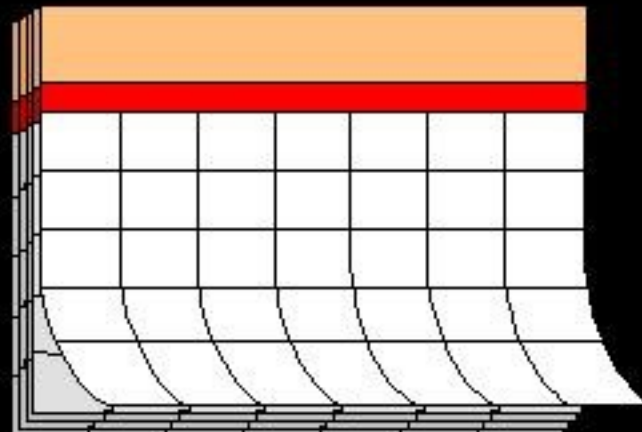


- **Initial**
 - 300-350 KIAS
 - 2,000 MSL
 - Break over approach end of runway
- **Downwind**
 - 200-250 KIAS
- **Final Approach**
 - 150 KIAS



When Do We Fly?

- **Monday – Friday (All Times Local)**
 - Generally Around 1000-1130 and 1400-1530
- **Saturday – Sunday**
 - 1 Weekend Per Month
 - Flying Times Will Vary
- **Night Flying**
 - Periodic Training
 - Typically 1 Hour After Sunset



Other Airspace Users



F-15E

Strike Eagle



F-16

Falcon



A-10

Thunderbolt



F-18

Hornet



F-14

Tomcat



AV-8

Harrier



B-1

Lancer



B-52

Stratofortress



KC-135

Stratotanker



KC-10

Extender

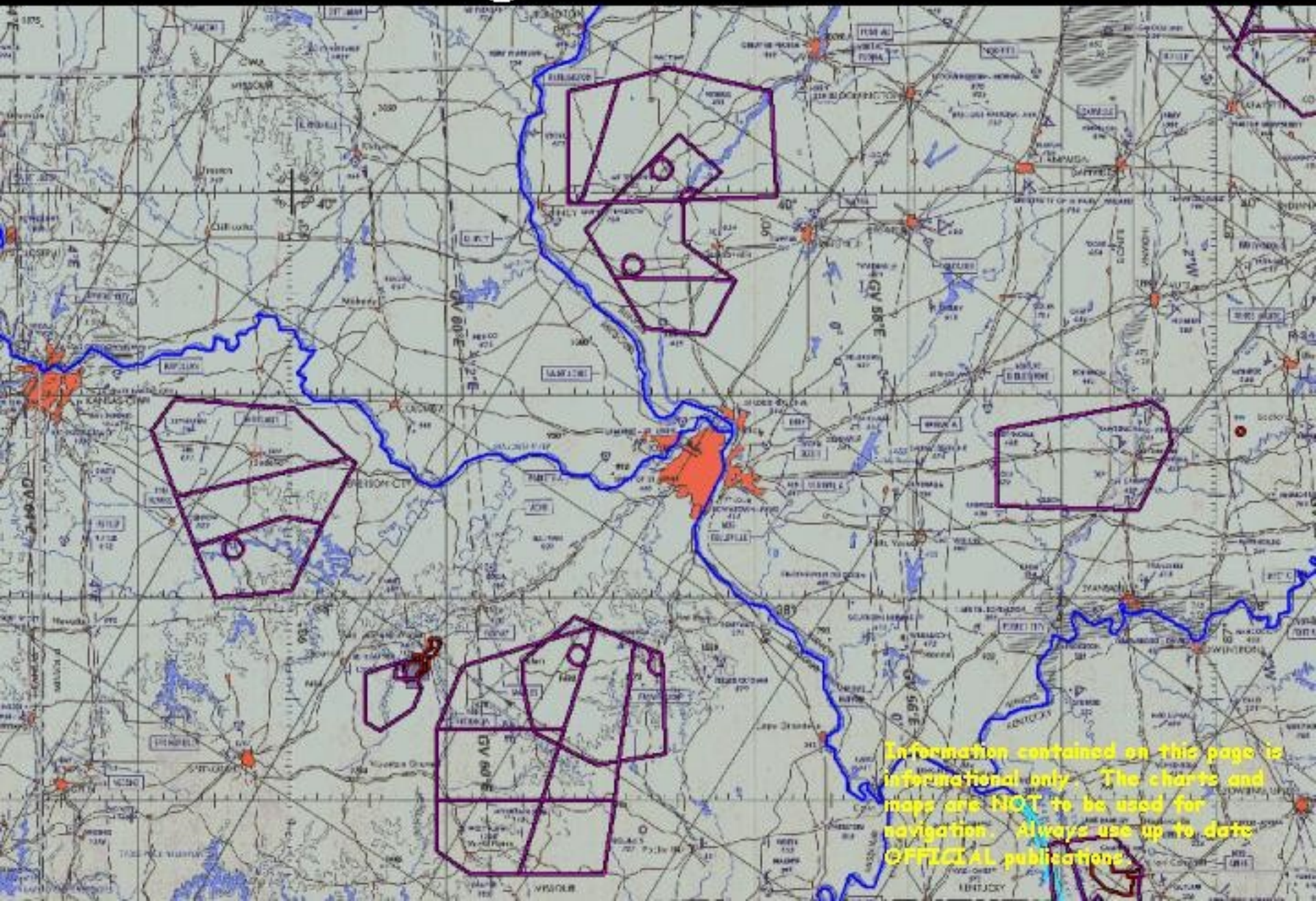


C-130

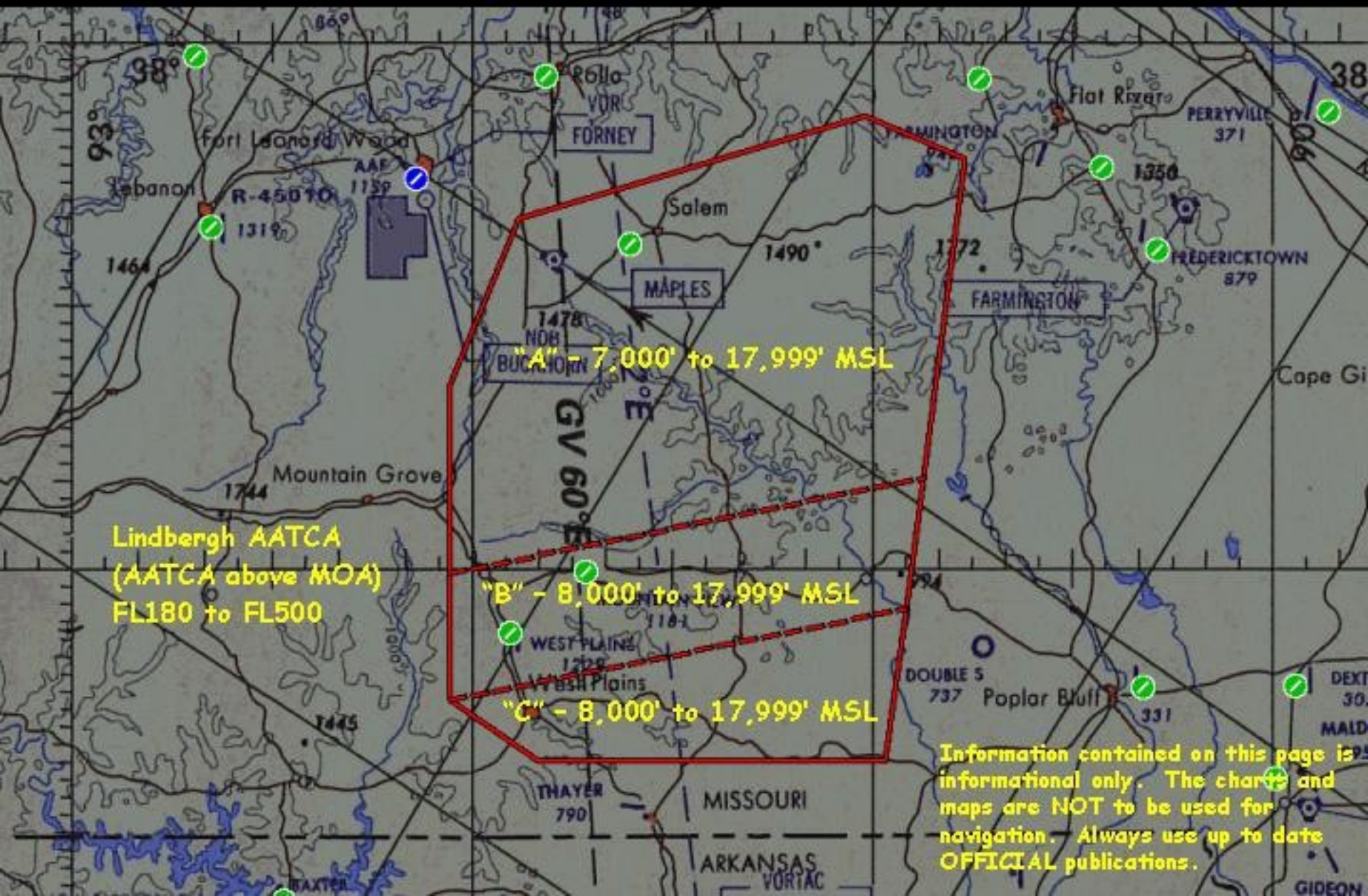
Hercules

* Pictures not to scale

Training Area Overview



Lindbergh MOA



Salem MOA

The chart displays the Salem MOA area, bounded by a red line. Key features include:

- Missouri River:** Flows along the northern and eastern boundaries of the MOA.
- Airports:** Salem (1490'), Farmington (1772'), Mountain View (1181'), West Plains (1229'), and Poplar Bluff (737').
- Navigation Aids:** VOR (1148'), NDB (1478'), and AAE (1139').
- Obstacles:** Several green circles indicate obstacles, with heights ranging from 305 to 1464 feet.
- Geographic Features:** Mountain Grove, Mountain View, and West Plains are labeled.
- State Boundary:** The Missouri/Arkansas border is shown at the bottom.

Information contained on this page is informational only. The charts and maps are NOT to be used for navigation. Always use up to date OFFICIAL publications.

Salem MOA

The chart displays the Salem MOA area, bounded by a red line. Key features include:

- Missouri River:** Flows along the eastern and southern boundaries of the MOA.
- Airports:** Salem (1490'), Maple (1478'), Mountain View (1181'), West Plains (1229'), and Poplar Bluff (737').
- Navigation Aids:** VOR (1148'), NDB (1478'), and VORTAC (1148').
- Obstacles:** Several obstacles are marked with green circles, including one at 1319' and another at 1350'.
- Geographic Features:** The Missouri River, Cape Girardeau, and the Arkansas-Missouri border are shown.

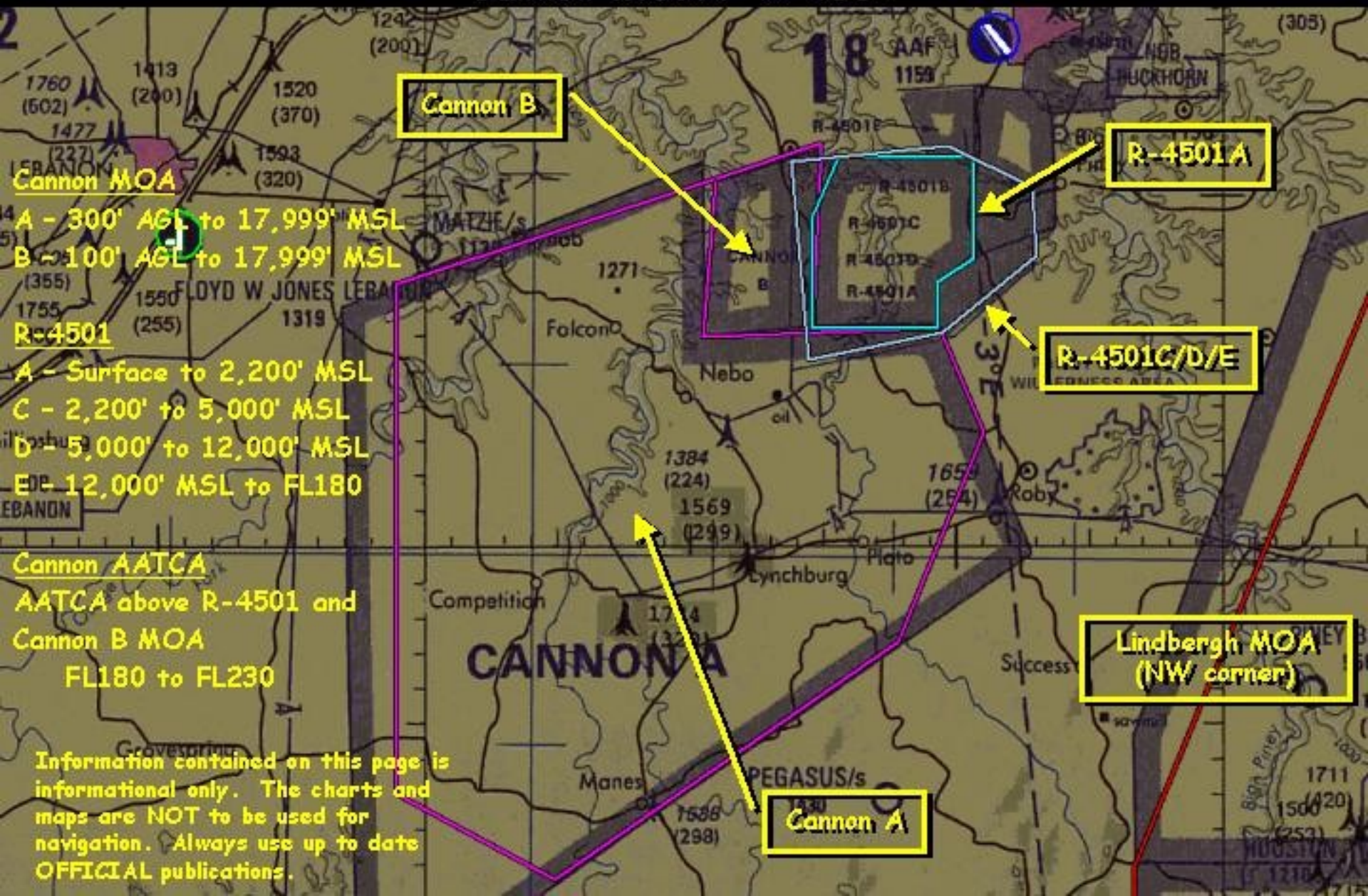
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Salem MOA

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Cannon Range

Cannon MOA / R-4501



Cannon MOA

A - 300' AGL to 17,999' MSL

B - 100' AGL to 17,999' MSL

R-4501

A - Surface to 2,200' MSL

C - 2,200' to 5,000' MSL

D - 5,000' to 12,000' MSL

E - 12,000' MSL to FL180

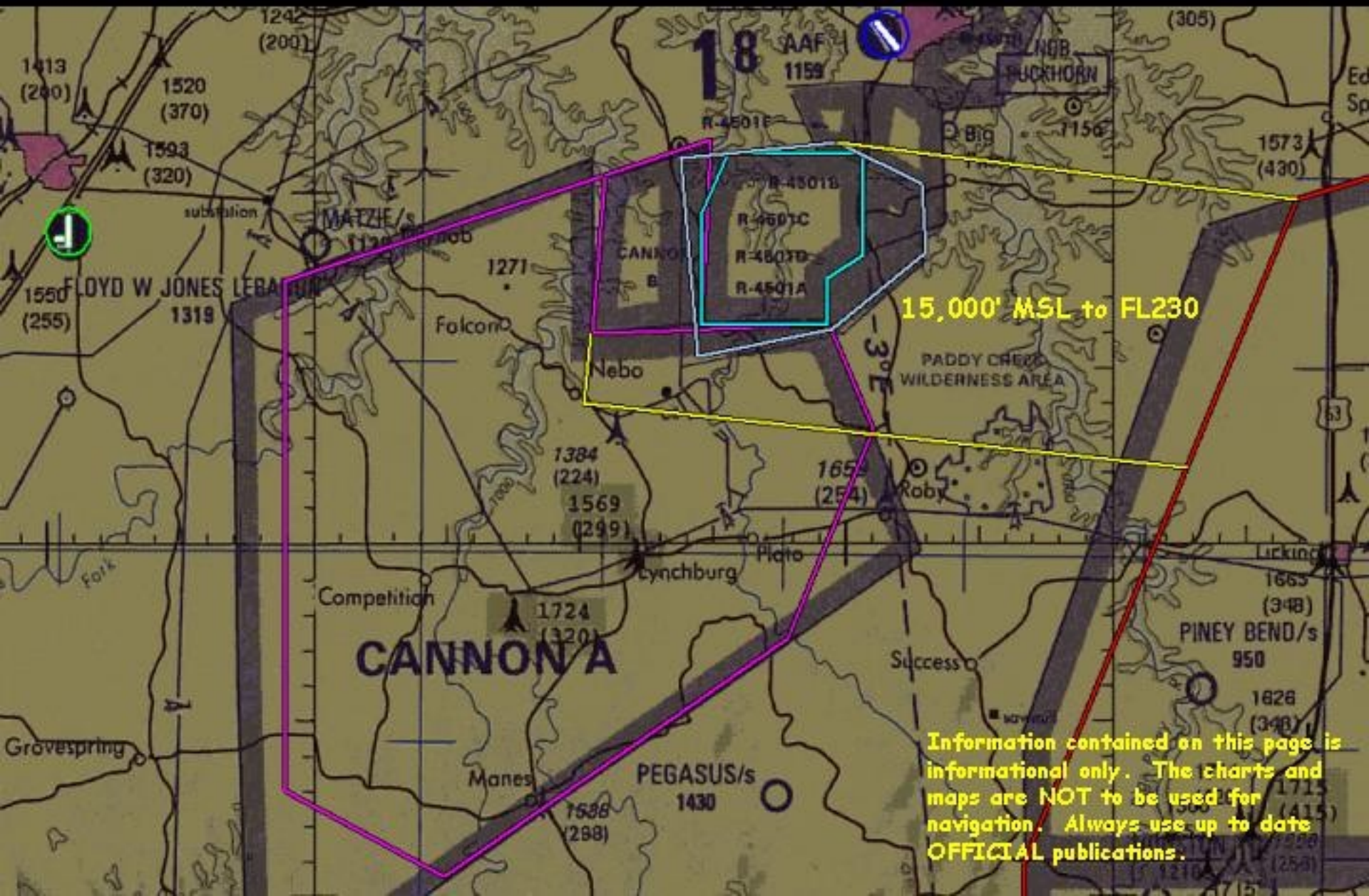
Cannon AATCA

AATCA above R-4501 and

Cannon B MOA

FL180 to FL230

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Military Operations Areas

- MOAs consist of airspace of defined vertical and lateral limits established for the purpose of separating certain military training activities from other traffic.
- Activities conducted in MOAs include, but are not limited to: air combat tactics, air intercepts, aerobatics, formation training, and low-altitude tactics.

Restricted Areas

- Penetration of restricted areas without authorization from the using or controlling agency may be extremely hazardous to the aircraft and its occupants.
- Restricted areas denote the existence of unusual, often invisible, hazards to aircraft such as artillery firing, aerial gunnery, or guided missiles.
- R-4501A/C/D/E is specifically used for Air-to-Ground training for Fighter/Attack aircraft. Aircraft employ a wide variety of training munitions, including 25 lb to 2000 lb practice bombs, rockets, and 20mm/30mm bullets.

Air-to-Air Training

- Air-to-Air Training Day or Night
 - Basic Fighter Maneuvers (BFM) 1v1
 - Air Combat Maneuvering (ACM) 2v1
 - Tactical Intercepts (TI) 2 or 4 v X
 - Air Combat Training (ACT) 2, 4, or 8 v X

Night Training

- **Military Aircraft Operating Lights Out**
 - Regulatory Docket No. FAA-2001-10191
 - To Train Lights Out, Aircraft Must Be Under Military Radar Control
 - MOAs Will Be NOTAM'd 48 Hours Prior
- **When Military Radar Control Is Not Available, Aircraft Will Be Operating With "Reduced" Lighting (Anti-collision Lights Off)**
- **Night Vision Goggles (NVGs) Will Normally Be Worn by Military Pilots Operating In and Around Special Use Airspace at Night.**

Aircraft Separation

- VFR Flight Through a MOA is Legal but Very Risky ...day or Night



- Expect Closure Speeds in Excess of 1000 Kts!
- If Flight Through MOA is Unavoidable, Attempt to Fly Near the Airspace Boundaries (Vertical and Lateral)
- Whenever Possible, Try to Avoid Flights Through a MOA

How to Avoid

- **NOTAMS**
 - 1-800-WX-BRIEF (1-800-922-7433)
- **Contact any FSS within 100 miles of the area to obtain accurate real-time information concerning Special Use Airspace hours of operation.**
 - 122.2 (common to and located at all FSS)
 - 122.1 (talk) / nearest VOR freq (listen)
- **For Lindbergh MOA, Salem MOA, Cannon MOA, and/or R-4501 real-time information specifically, contact Kansas City Ctr - 133.4**

Mid-Air Collision Study

During a three-year study of mid-air collisions involving civilian aircraft, the National Traffic Safety Board (NTSB) determined that:

- The occupants of most mid-airs were on a pleasure flight with no flight plan filed.
- Nearly all midair collisions occurred in VFR conditions during weekend daylight hours.
- The majority of mid-airs were the result of a faster aircraft overtaking and hitting a slower aircraft.
- No pilot is immune. Experience levels in the study ranged from initial solo to the 15,000 hour veteran.
- The vast majority of mid-airs occurred at uncontrolled airports below 3,000 feet.
- Enroute mid-airs occurred below 8,000 feet and within 25 miles of the airport.
- Flight instructors were onboard one of the aircraft in 37% of the mid-airs.

Closure Speed

- This chart (link below) shows the effect of closure speed. Size is that of a F-15 aircraft. Times and distances shown are based on "head on" closure speeds. Assuming 12 seconds to perceive another aircraft and then avoid it, the chart shows that recognition under 3 miles will normally result in a collision.

[Click here for Reaction Time and Closure Rate Chart](#)

[Click here to download Adobe Acrobat Reader](#)

Reaction Time

- The time to perceive and recognize an aircraft, become aware of a collision potential, and decide appropriate action, may vary from as little as 2 seconds to 10 seconds or more, depending on the human, type of aircraft, and geometry of the collision situation. On top of this time, aircraft reaction time must be added. Also remember that any evasive action contemplated should include maintaining visual contact with other aircraft, if practical.

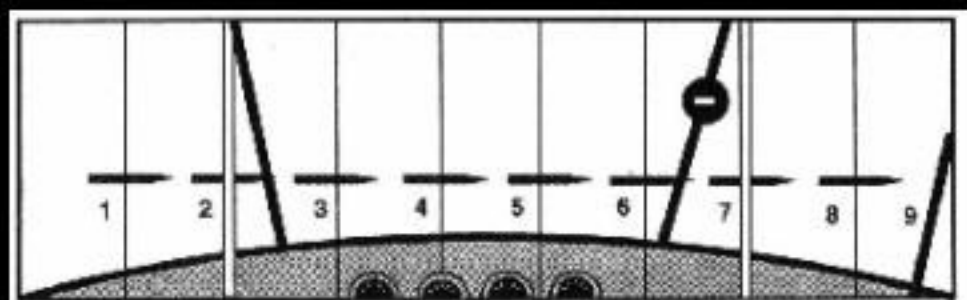
[Click here for a Chart of the Geometry of a Collision Course](#)

How Well Do You Scan?

- Next time you are out and about, check yourself. See how long you go without looking out the window. If you find that you glance out and give the old one-two without stopping to focus on anything or you stare out into one spot for an extended period of time, your "scan" is inadequate and you may be headed for an in-flight collision.

Learn an Efficient Scan Pattern

- “Side to Side” scan pattern. Start at the far left of your visual area and make a methodical sweep to the right, pausing in each block to focus. At the end of the scan, return to your instruments for 2-3 seconds. Then begin again.



Learn an Efficient Scan Pattern

- There are other methods of scanning, which may be as effective for you as the one discussed. Whichever method you choose, it takes a lot of hard work to become proficient at it. The best way to become proficient is through practice, and the best way to practice is on the ground, in your own airplane, or the one you usually fly in. Good luck and we'll SEE you in the skies!

For further information:

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Want to Be A Part of Who We Are and What We Do?



<http://www.mostlo.af.mil/recruiting/recruiting.html>

